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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,119	07/22/2005	Morito Akiyama	63834 (70904)	9509
21874 7590 05/14/2008 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				
EXAMINER				
ADDISON, KAREN B				
ART UNIT		PAPER NUMBER		
2834				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/543,119

Applicant(s)

AKIYAMA ET AL.

Examiner

Karen B. Addison

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/26/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/02)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Akiyama (WO103066).

The applied reference has a common Akiyama with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Akiyama discloses a piezoelectric device in figs. 1-13 comprising: a first electrode layer(not shown in fig.7 but stated on page 6 -page 9), a piezoelectric layer(AIN) and a second electrode layer(Pt) laminated on a substrate(Glass) in this order, Wherein, the piezoelectric layer is being made of aluminum nitride and /or zinc oxide, and a degree of dipole-orientation of the piezoelectric layer being 55% or more. Akiyama also disclose, the first electrode layer made of any one of TiN, MoSi₂, Cr, Fe, Mg, Mo, Nb, Ta, Ti, Zn, Zr, W, Pt, Al, Ni, Cu, Pd, Rh, Ir, Ru, Au and Ag(page 8). Wherein, the first electrode layer has a lamination structure comprising a contact layer that contacts the substrate, and at least one conducting layer formed on the contact layer (page 9-11). Akiyama disclose, the surface layer of the conducting layer is an oriented metal having a crystal face whose atomic arrangement is identical with an atomic arrangement of (0001) face of aluminum nitride and/or zinc oxide, and in which a distance between atoms is substantially identical with a distance between atoms on (0001) face of aluminum nitride and/or zinc oxide, and the crystal face is parallel to a face of the substrate(page 9-11). Akiyama also disclose, the surface layer of the conducting layer made of a metal whose electronegativity ranges from not less than 1.3 to not more than 1.5 and the surface layer of the conducting layer is made of any one of TiN, MoSi₂, Si₃N₄, Cr, Fe, Mg, Mo, Nb, Ta, Ti, Zn, Zr, W, Pt, Al, Ni, Cu, Pd, Rh, Ir, Ru, Au and Ag.(Table 1 page 14) Wherein, the surface layer of the conducting(substrate) layer is made of any one of an oriented W layer, (an oriented Pt layer, an oriented Al layer, an oriented Ni layer, an oriented Cu layer, an oriented Pd layer an oriented Rh layer, an oriented Ir layer, an oriented Ru layer, an oriented Au layer and an oriented Ag layer, and (111) face of the

surface layer is parallel to the face of the substrate). Wherein, at least one of the conducting layer are constituted of a first layer made of any one of Ti, Cr and Ta formed in the contact layer, and a second layer made of any of Pt, Au and Ag or Pt, Ni on the second layer and the third layer made of Au is formed on the second layer(page14-23). Akiyama also discloses, the second electrode layer having a lamination structure with a plurality of conducting layers. Wherein, the substrate is made of glass, metal, plastic or sintered ceramic whose thickness ranges from 5 to 100 μ m(fig.7). The method of making is inherent based on the structural limitation of the claims.

Response to Arguments

2. Applicant's arguments filed 12/26/07 have been fully considered but they are not persuasive.
3. In response to the applicant's argument that Akiyama does not teach or suggest a piezoelectric layer having any particular degree of dipole-orientation, much less a dipole orientation of 55% or more is noted. However, Akiyama discloses the dipole orientation of the piezoelectric layer at (111) which is more than 55%(see page 6-11).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 2834

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen B. Addison whose telephone number is 571-272-2017. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KBA/
04/28/08

/Darren Schuberg/

Application/Control Number: 10/543,119

Page 6

Art Unit: 2834

Supervisory Patent Examiner, Art Unit 2834